KARTA PRZEDMIOTU

I. Dane podstawowe

Nazwa przedmiotu	Analytic geometry
Nazwa przedmiotu w języku angielskim	Analytic geometry
Kierunek studiów	Informatyka
Poziom studiów (I, II, jednolite magisterskie)	I
Forma studiów (stacjonarne, niestacjonarne)	Stacjonarne
Dyscyplina	Informatyka
Język wykładowy	angielski

Koordynator przedmiotu/osoba odpowiedzialna	Dr Wiesław Główczyński

Forma zajęć *(katalog zamknięty ze słownika)*	Liczba godzin	semestr	Punkty ECTS
wykład	15	II	3
konwersatorium			
ćwiczenia	15	II	
laboratorium			
warsztaty			
seminarium			
proseminarium			
lektorat			
praktyki			
zajęcia terenowe			
pracownia dyplomowa			
translatorium			
wizyta studyjna			

Wymagania wstępne	Lecture: "Linear algebra."

II. Cele kształcenia dla przedmiotu

C1 - Gaining knowledge of basic concepts of analytical geometry and mathematical methods applied in it.
C2 - To acquire the ability to formulate various problems in the language of analytical geometry.
C3 - Preparation for further studies in the field of computer science.

III.   Efekty uczenia się dla przedmiotu wraz z odniesieniem do efektów kierunkowych

Symbol	Opis efektu przedmiotowego	Odniesienie do efektu kierunkowego
WIEDZA		
W_01	The student has knowledge about analytical geometry useful when formulating and solving simple tasks associated with the computer science	K_W02
W_02		
W_…		
UMIEJĘTNOŚCI		
U_01	The student can use acquired knowledge about analytical geometry to describe processes, create models, write algorithms and other activities in informatics	K_U22
U_02	The student can use logic, methods of providing proof and recursion in order to solve problems in the computer science.	K_U21
KOMPETENCJE SPOŁECZNE		
K_01	The student is aware of the level of his/her knowledge and skills, understands the need of further training and improving both professional and personal competence	K_K01
K_02		

IV.   Opis przedmiotu/ treści programowe

1. Vectors in space. Free vectors. 2. Scalar, vector and mixed products. Norm and distance. Angle between vectors. 3. Planes and lines. Mutual position of points, lines and planes. 4. Plane transformations. 5. Conic curves.

V.   Metody realizacji i weryfikacji efektów uczenia się

Symbol efektu	Metody dydaktyczne *(lista wyboru)*	Metody weryfikacji *(lista wyboru)*	Sposoby dokumentacji *(lista wyboru)*
WIEDZA			
W_01	Classical lecture	Exam	Report
W_02			
UMIEJĘTNOŚCI			
U_01	Practical classes.	Test	Report
U_02	Practical classes.	Test	Report
KOMPETENCJE SPOŁECZNE			
K_01	Classical lecture /Practical	Exam/Test	Report

	classes.		
K_02			

VI. Kryteria oceny, uwagi…

Exam (for students who passed classes):
– in groups of less than 8 students – oral exam
– in groups of 8 or more students – written exam (and oral exam for students who didn't received 50% points at written exam).
Exam, passing level is 50% of the sum of points;
91% – 100% (5.0)
81% – 90% (4.5)
71% – 80% (4.0)
61% – 70% (3.5)
50% – 60% (3.0)
less than 50% (2.0)
Grade (2)
(W) – the student does not know fundamental notions discussed on classes;
(U) - the student can not solve basic problems from analytic geometry;
(K) - student is unconscientious, does not participate in classes, does not do notes.
Grade (3)
(W) - the student knows fundamental notions discussed on classes. The sudent knows examples illustrating these notions;
(U) - the student can solve basic problems from analytic geometry. The sudent can apply basic techniques of solving such problems;
(K) - the student participates in classes, does notes.
Grade (4)
(W) - student knows well fundamental notions discussed on classes. The sudent has a knowledge of basic properties of these notions and their proofs. The sudent knows how use these properties to solve basic problems;
(U) - the student can solve basic problems from analytic geometry. The sudent can apply more advanced techniques of solving such problems. The sudent can use basic properties of notions;
(K) - student is prepared to classes. The sudent has a knowledge of basic properties of these notions and their proofs.
Grade (5)
(W) - the student knows well fundamental notions discussed on classes. The sudent has a knowledge of more advanced properties of these notions and their proofs. The sudent knows how use these properties to solve more advanced problems. The sudent knows more important techniques of proofs;
(U) - the student can solve more advanced problems from analytic geometry. The sudent can apply more advanced techniques of solving such problems. The sudent can use more advanced properties of notions. The sudent can perform simple proofs;
(K) - the student participates actively in classes, asks questions, proposes solutions.

In groups of less than 8 students credits are given by active participation in classes.

In groups of 8 or more students – written colloquium.

Colloquium, passing level is 50% of the sum of points;

91% – 100% (5.0)

81% – 90% (4.5)

71% – 80% (4.0)

61% – 70% (3.5)

50% – 60% (3.0)

less than 50% fail and lack of active participation in classes (2.0)

Hourly equivalent to ECTS credits:

Lecture - 15

Classes - 15

Consultations - 30

Student's own work:

Preparation for classes including self-solving of tasks identified by the teacher - 15

Preparing for the tests and exam, including reading the literature - 15

Total number of hours - 90

Total number of ECTS credits per module 3

VII.   Obciążenie pracą studenta

Forma aktywności studenta	Liczba godzin
Liczba godzin kontaktowych z nauczycielem	60
Liczba godzin indywidualnej pracy studenta	30

VIII.   Literatura

Literatura podstawowa
Basic: 1.W. Kaplan; D. J. Lewis , Calculus and Linear Algebra. Vol. 1: Vectors in the Plane and One-Variable Calculus Published by: Ann Arbor, MI: Michigan Publishing, University of Michigan Library, 2007 by https://quod.lib.umich.edu/s/spobooks/5597602.0001.001/--calculus-and-linear-algebra-vol-1-vectors-in-the-plane 2.W. Kaplan; D. J. Lewis, Calculus and Linear Algebra. Vol. 2: Vector Spaces, Many-Variable Calculus, and Differential Equations, Calculus Published by: Ann Arbor, MI: Michigan Publishing, University of Michigan Library, 2007 by https://quod.lib.umich.edu/s/spobooks/5597602.0002.001/--calculus-and-linear-algebra-vol-2-vector-spaces-many
Literatura uzupełniająca
Advanced: 1.R. A. Sharipov, Course of analytical geometry - https://arxiv.org/pdf/1111.6521.pdf 2. I. Vaisman, Analytical Geometry, World Scientific, 1997, 3. W.H. McCrea Analytical geometry of three dimensions, Dover Pub., 2006